

Remarks

The Office Action dated August 20, 2009, has been received and carefully reviewed. The preceding amendments and the following remarks form a full and complete response thereto.

The Abstract has been amended to comply with the word limit. The Specification has been amended to replace “MSG,” which is an abbreviation for the German word “metall-schutzgas,” with “GMAW,” the abbreviation for “gas metal arc welding,” which is the English translation of “metall-schutzgas.” No new matter has been added.

Claims 1-16 have been amended as to matters of form. For example, reference numbers have been deleted from the claims and claims 6-9, 11 and 16 have been amended to replace the German abbreviation “MSG” with its translation, “GMAW.”

Claim 1 has been amended to include subject matter of original claim 9. Claim 6 has been rewritten in independent form including the subject matter of original claim 1. Claim 6 has also been amended to specify that the GMAW power line, GMAW process gas line and GMAW wire feed line are included in the connecting line. Support for this amendment can be found, for example, in the specification at ¶ 0048. Claim 16 has been amended to include the subject matter of claims 17 and 18. Claim 19 has been added to further define the invention. Support for this amendment can be found, for example, in the specification at ¶ 0037. Claims 20 and 27 has been added to specify that the high-power laser beam source may be a high-power fibre laser beam source. Support for these amendments can be found, for example, in original claim 1. Claims 21-26 have been added to further define the invention. Support for these amendments can be found, for example, in original claims 10 and 12-16, respectively. No new matter has been added. Claims 17 and 18 have been cancelled without prejudice or disclaimer.

Accordingly, claims 1-16 and 19-27 are pending in the present application and are submitted for consideration.

Abstract

Objections were made to the Abstract for having more than 150 words. The Abstract has been amended to comply with the word requirement. Accordingly, withdrawal of the objection to the abstract is respectfully requested.

Claim Objections

Objection was made to claim 7 for a minor informality. The informality pointed out by the Examiner has been corrected by the removal of reference numbers from the claims. Accordingly, withdrawal of the claim objections is respectfully requested.

Rejection of Claims under 35 U.S.C. § 112

Claims 1, 2, 6, 9-11, 13, 14 and 16-18 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 17 and 18 have been cancelled, and its subject matter has been incorporated into claim 16. Applicants respectfully traverse the rejections for the following reasons.

Claims 1, 2, 6, 9-11, 13 and 14

In regard to claims 1, 2, 6, 9-11, 13 and 14, the Office objected to the use of the phrase “can be” in the claims. The phrase “can be” was deleted. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claim 16

In regard to claim 16, the Office found the use of “a” before claim elements that had been previously introduced to render the claims indefinite. Claim 16 has been amended so that “the” is used before claim elements which have previously been introduced. However, it is noted that “a” is used before claim elements that are not introduced in claims 1 or 15. Accordingly, claim 16 is definite, and withdrawal of the rejection is respectfully requested.

Rejection of Claims under 35 U.S.C. § 103

Claims 1-8 and 15 were rejected under 35 U.S.C. § 103(a) as being as being unpatentable by reason of obviousness over U.S. Patent No. 5,227,601 to Black (“Black”) in view of J.P. Patent No. 2-127974 to Motoi (“Motoi”) and further in view of U.S. Patent No. 5,796,068 to Jones (“Jones”). Claims 9-14 were rejected as being as being unpatentable by reason of obviousness over Black in view of Motoi and further in view of Jones and further in view of Kawamoto. Applicant respectfully traverses the rejections and submits that the claims are patentable for the following reasons.

Independent Claim 1

Claim 1, upon which claims 2-5, 10, 12-16 and 20 depend, is drawn to an orbital welding device for mobile use for joining a first pipe end and a second pipe end along a circumferential joint by means of at least one weld seam. In particular, the orbital welding device is for producing a pipeline to be laid on land. The orbital welding device comprises at least a guide ring, an orbital carriage, a feed device, a welding head, a connecting line, a mobile welding device, orbital position sensor and a first process parameter control. The guide ring is oriented relative to the first pipe end and the circumferential joint. The orbital carriage is displaceably guided at least along a section of the guide ring. The feed device is for moving the orbital

carriage under motor power along the guide ring. The welding head is arranged on the orbital carriage in alignment with the circumferential joint so that, by moving the orbital carriage, the weld seam is produced at least along a section of the circumferential joint. The mobile welding device is a distance away from the orbital carriage and is connected via the connecting line to the welding head. The mobile welding device provides the power required for producing the weld seam. The orbital position sensor is for detecting the orbital position of the orbital carriage. **The first process parameter control is connected to the orbital position sensor and at least to the high-power laser beam source in such a way that laser radiation parameters are automatically adapted as a function of the orbital position of the orbital carriage.** The welding device is a high-power laser beam source. A laser beam is produced by means of the high-power laser beam source. The connecting line is a waveguide for guiding the laser beam to the orbital carriage. The welding head is a laser welding head for directing the laser beam into a laser welding zone and for the consequent production of the weld seam.

Applicants respectfully submit that claim 1 is patentable over Black in view of Motoi and further in view of Jones and further in view of Kawamoto because Black, Motoi, Jones and Kawamoto, alone or in combination, do not disclose or suggest each and every feature of claim

1. For example, the cited references do not disclose or suggest:

- an orbital position sensor for detecting the orbital position of the orbital carriage and
- **a first process parameter control which is connected to the orbital position sensor and at least to the high-power laser beam source in such a way that laser radiation parameters are automatically adapted as a function of the orbital position of the orbital carriage,**

as required by amended claim 1. (emphasis added).

It was admitted in the Office Action that Black, Motoi and Jones do not disclose an orbital position sensor and a first process parameter control. Office Action at p. 5. However, the

Office alleges that Kawamoto teaches an orbital position sensor at col. 4, lines 42-60 and col. 13, lines 10-38 and a position control 101 at col. 4, lines 42-60; col. 8, lines 20-30 and Fig. 10. *Id.* At the portion of Kawano cited regarding the position control, Kawano discloses a control unit 101 for controlling a welding head 102, an optical feeding reel 103 and a laser oscillator 104. Kawano at col. 8, lines 20-30 and Fig. 10. At the portion of Kawano cited regarding the orbital position sensor, Kawano discloses position sensors 201-1, 201-2, 201-3 and 201-4 that detect the orbital position of work head 18B. Kawano at col. 13, lines 10-38.

First, control unit 101 of Fig. 10 of Kawano is **not connected** to the position sensors 201-1, 201-2, 201-3 and 201-4 of Figs. 21 and 22 of Kawano, as required by the claim, because the two are not even disclosed in the same embodiment of Kawano. *See* Kawano at col. 8, lines 16-19 and col. 11, lines 11-12.

Second, the cited portions of Kawano do not disclose that **laser radiation parameters** are **automatically adapted** as a function of the orbital position of work head 18B. To the contrary, control unit 101 has nothing do with position sensors 201-1, 201-2, 201-3 and 201-4, and the position sensors 201-1, 201-2, 201-3 and 201-4 have nothing to do with the laser radiation parameters of Kawano. Instead, Kawamoto discloses that “position sensors 201-1, 201-2, 201-3 and 201-4 are provided around the outer circumferential guide 5B for detecting the position of the work head 18B in order to prevent interference between the laser beam and the tubular barrel supporting device 102B.” Kawamoto at col. 13, lines 18-22. In response to a position signal from the position sensors 201-1, 201-2, 201-3 and 201-4 indicating that the work head 18B has come to a position in which a leg of the tubular barrel supporting device 102B would interfere with the laser beam, control unit 101B lowers the leg of the tubular barrel supporting device 102B to prevent the interference. As the raising and lowering of legs of the

tubular barrel supporting device 102B is not the adaption of a laser radiation parameter, Kawano does not disclose that “laser radiation parameters are automatically adapted as a function of the orbital position of the orbital carriage,” as required by amended claim 1.

At least because none of the cited references disclose or suggest the “orbital position sensor” and “a first process parameter control” as claimed, the rejection of amended claim 1 over the combination of Black, Motoi, Jones and Kawamoto is improper. Reconsideration and withdrawal of the rejection are respectfully requested.

Independent Claim 6

Claim 6, upon which claims 7-9, 11, 19 and 21-27 depend, is drawn to an orbital welding device for mobile use for joining a first pipe end and a second pipe end along a circumferential joint by means of at least one weld seam. In particular, the orbital welding device is for producing a pipeline to be laid on land. The orbital welding device comprises at least a guide ring, an orbital carriage, a feed device, a welding head, a connecting line, and a mobile welding device. The guide ring is oriented relative to the first pipe end and the circumferential joint. The orbital carriage is displaceably guided at least along a section of the guide ring. The feed device is for moving the orbital carriage under motor power along the guide ring. **The welding head is arranged on the orbital carriage** in alignment with the circumferential joint so that, by moving the orbital carriage, the weld seam is produced at least along a section of the circumferential joint. The mobile welding device is a distance away from the orbital carriage and is connected via the connecting line to the welding head. The mobile welding device provides the power required for producing the weld seam. The welding device is a high-power laser beam source. A laser beam is produced by means of the high-power laser beam source. The connecting line is a waveguide for guiding the laser beam to the orbital carriage. The welding head is a laser

welding head for directing the laser beam into a laser welding zone and for the consequent production of the weld seam. **A gas metal arc welding (GMAW) head is arranged indirectly or directly on the orbital carriage.** The connecting line includes a GMAW power line, a GMAW process gas line, and a GMAW wire feed line. A GMAW power source is a distance away from the orbital carriage and is connected via the GMAW power line to the GMAW head for forming the GMAW arc. A GMAW process gas store is a distance away from the orbital carriage and is connected via the GMAW process gas line to the GMAW head for supplying the GMAW process gas. And, a GMAW wire feed unit is a distance away from the orbital carriage and is connected via the GMAW wire feed line to the GMAW head for supplying the GMAW wire.

Applicants respectfully submit that claim 6 is patentable because Black, Motoi and Jones, alone or in combination, do not disclose or suggest each and every feature of claim 6. For example, none of the cited references disclose or suggest:

- an orbital carriage displaceably guided at least along a section of the guide ring,
- ...
- **a welding head which is arranged on the orbital carriage ...**,
- ...
- **a gas metal arc welding (GMAW) head is arranged indirectly or directly on the orbital carriage**

as required by claim 6. (emphasis added). The Office made no attempt to specifically address this feature of claim 6 in the rejections. At least because the cited references do not disclose or suggest an orbital welding device having an orbital carriage on which both a welding head and a GMAW head are arranged, the rejection of claim 6 over the combination of Black, Motoi and Jones is improper. Reconsideration and withdrawal of the rejection are respectfully requested.

Dependent Claims 2-5, 7-16 and 19-27

Claims 2-5, 7-16 and 19-27 depend, directly or indirectly, on independent claims 1 or 6 and are patentable over the combination of Black, Motoi, Jones and Kawamoto for the same reasons discussed above with regard to claims 1 and 6 as well as for additional limitations they recite.

Conclusion

All of the stated grounds of rejection have been sufficiently addressed herein. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections, and that they be withdrawn. Applicants submit that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

The Applicants respectfully petitioned for a three-month extension of time. Any fees for the extension together with any additional fees may be charged to Counsel's Deposit Account No. 02-2135.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

Date: February 22, 2010

RESPECTFULLY SUBMITTED,

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